



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/490,705	01/24/00	UENO K	NECV-16.966

Helfgott & Karas P. C.
Empire State building
60th Floor
New York NY 10118-0110

MMC2/0801

EXAMINER

TRAN, T

ART UNIT PAPER NUMBER

2811

DATE MAILED: 08/01/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/490,705

Applicant(s)

UENO, KAZUYOSHI

Examiner

Thien F Tran

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 2-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 & 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 2811

DETAILED ACTION

Election/Restriction

1. Applicant's election of Group I, claim 1 in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Specification

2. The abstract of the disclosure is objected to because the invention is about the device, not the process of making the device. Therefore, the abstract should be directed to the device, its structure and operation instead of the steps of forming the device. Correction is required. See MPEP § 608.01(b).

Claim Objections

3. Claim 1 is objected to because of the following informalities: line 2, "interconnect layers" should be --an interconnect layer--; line 3, "are" should be --is--. Appropriate correction is required.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the interconnect layers must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Art Unit: 2811

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 1 recites the limitation "said interconnect layer" in lines 10 and 12. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

9. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Zhao et al. (US 6,037,664).

Zhao et al. discloses the claimed semiconductor device (Figs. 1-12) comprising a substrate 11, on a main surface of which, an interconnect layer 10 made of copper is formed along with a predetermined pattern in buried condition; a silicon nitride layer 13 formed on the main

Art Unit: 2811

surface of the substrate; and an insulation layer 14 formed on the silicon nitride layer 13, the semiconductor device further comprises a via 24 provided on main surface of the insulation layer and penetrating through the insulation layer and the silicon nitride layer so that a bottom of the via reaches at a surface of the interconnect layer, and wherein a barrier layer 28 continuously covering the main surface of the insulation layer 14, inside wall surface of the via and surface of the interconnect layer 10 integrately. Fig. 9 of Zhao et al. clearly shows the etching of the via 24 being stopped at the surface of the silicon nitride layer 13 and the silicon nitride layer remains intact at the bottom of the via 24 (col. 7, lines 45-51) and then in Fig. 10 shows another etching using a different etch chemistry is performed in order to further etch the silicon nitride layer 13. The etching process used in Zhao is also the same etching process used in the present invention; therefore, if it is true in the present invention that silicon nitride layer 2 shown in Figs. 1a-1c of the application functions as an etching-top layer then it is also true in Zhao et al. that the silicon nitride layer 13 functions as an etching-stop layer.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Thien Tran** whose telephone number is (703) 308-4108. The examiner can normally be reached on Monday through Friday from 7:30AM to 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Tom Thomas**, can be reached on (703) 308-2772. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722.

Art Unit: 2811

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Tom Thomas

TOM THOMAS
SUPERVISORY PATENT EXAMINER

tt

July 27, 2001